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Frontiers in Geoscience Colloquium

Monday, July 11, 2016

3:00pm – 4:00pm

Physics Auditorium (TA-3, Bldg 215)

Computational Modeling of Induced Seismicity

Professor Ruben Juanes

Massachusetts Institute of Technology

The coupling between subsurface flow and geomechanical deformation is critical in the assessment of the environmental impacts of groundwater use, underground liquid waste disposal, geologic storage of carbon dioxide, and exploitation of shale gas reserves. In particular, seismicity induced by fluid injection and withdrawal has emerged as a central element of the scientific discussion around subsurface technologies that tap into water and energy resources. Here we present a new computational approach to model coupled multiphase flow and geomechanics of faulted reservoirs. We present the application of the coupled flow-geomechanics simulation technology to the *post mortem* analysis of several earthquake sequences. These early applications suggest that computational modeling of coupled flow and geomechanics, in combination with geologic, seismotectonic, and geodetic constraints, provides a promising approach for assessing and managing risk due to induced seismicity.

Host: Joaquin Gimenez-Martinez, EES-14, 7-9419

